

R E M A R K S

Claims 25-45 are now in this application, and are presented for the Examiner's consideration.

Additional Claim Fee

Since there are now a total of 21 total claims in the application, payment of \$25.00 for the additional claim in excess of 20 claims is provided herein.

Payment is being provided with the filing of this Amendment.

Please charge any additional fees for this extension of time to Deposit Account No. 07-1524.

Objection to Specification

The specification was objected to on the basis of a misspelling of the word "atension" at page 1, line 18 of the specification.

By this amendment applicants have corrected this error in the specification.

Further amendments have been made to the specification to conform the Summary of the Invention to the amended claims.

Accordingly, it is respectfully submitted that the objection to the specification has been overcome.

Rejection of Claims under 35 U.S.C. §112

Claim 19 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Specifically, it was stated that a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation in the same claim is considered indefinite since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired.

In this regard, it was stated that claim 19 recites the broad recitations of photosetting resin and thermosetting resin, and the claim also recites aromatic vinyl resin, acrylic resin, polyester, polycarbonate, polyurethane, polyamide, polysulfone and polycyclopentadiene, which is the narrow statement of the range/limitation.

Applicants have carefully reviewed the rejection of previous claim 19 as being indefinite due to the fact that the term "photosetting resin and thermosetting resin" could be considered as reciting compounds which are generic to the more narrower designations for other compounds recited in the same claim.

In response thereto, these limitations have been separated out into separate claims, namely, claims 31-36.

Accordingly, in view of the cancellation of claim 19, it is respectfully submitted that the rejection of claim 19 under 35 U.S.C. §112, second paragraph, has been overcome.

Prior Art Rejections

Claim 13 was rejected under 35 U.S.C. §102(b) as being anticipated by the Wentz et al article.

With respect to the claims, applicants have replaced previous claims 13-24 with new claims 25-45 which are believed to more clearly define the invention.

Applicants have carefully reviewed the Wenz et al reference cited by the Examiner and respectfully submit that the invention as presently claimed is not anticipated under 35 U.S.C. §102(b). Wenz et al, (dated 1982), indicates at the bottom of page 231 that they are reporting on a new soluble poly(diacetylene) derived from TS-12 (dodeca-5,7-diyn-1,12-yne di-p-toluenesulfonate). Poly(TS-12) is stated to be soluble in many organic solvents at room temperature. Hence, the reference is directed to the preparation of a new polymer and a characterization of its properties. There is very little disclosure of lower molecular fractions of the polymer. It is indicated that when photodecomposition was employed, a normal molecular weight distribution will arise (see the last paragraph on page 234). Applicants respectfully submit that this is not a

disclosure of the relatively narrow molecular weight distribution of the present invention as shown, for example, in Figure 6 of the present application.

Moreover, there is no disclosure in Wenz et al of the use of laser light of a specific wavelength or irradiation time, the limitations of which are discussed more fully below in regard to the rejection based on Leyrer et al.

Applicants therefore respectfully submit that since each and every feature of the present invention as now claimed in claims 25-36 is not disclosed in Wenz et al, the rejection of claim 13 under 35 U.S.C. §102(b), as applied to new claims 25-45, has been overcome, and withdrawal of the rejection is therefore respectfully requested.

Claims 13-24 were rejected under 35 U.S.C. §102(b) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as being obvious from, U.S. Patent No. 4,640,960 to Leyrer et al.

Applicants respectfully submit that new claims 25-36 are neither anticipated by nor rendered obvious by the disclosure contained therein.

While Leyrer et al may disclose the process of degradation of 1,4-PDA, (polydiacetylene), through the process of radiating actinic light or heating, there is an essential difference between Leyrer's invention and applicants' claimed invention in

chemical composition of the reaction mixture. In the Leyrer et al process, a so called sensitizer or sensitizer system is present and appears to be an essential feature in Leyrer et al. Such is not the case in the present claimed invention. This difference is quite important for the reason that the degradation mechanism of 1,4 PDA can be regarded to be entirely different for the case, with or without a sensitizer. In Leyrer et al, it is necessary to prepare a homogeneous mixture of 1,4 PDA with a sensitizer which can be activated by heat and/or actinic light, etc. to form reactive free radicals, as is described in claim 1 of Leyrer et al.

In the examples of Leyrer et al, the following sensitizers are set forth in column 4:

xanthene dyes such as Rhodamine 6G;
thiazinium dyes, such as methylene blue; and
free radical catalysts such as benzoyl peroxide, and
the like.

Actually, such sensitizers are used in the process of radiating light or heating for reducing the molecular weight of 1,4-PDA in examples 1-8, while no reduction of molecular weight of 1,4-PDA is confirmed without a sensitizer.

In Leyrer et al, degradation of 1,4-PDA is induced via free radical reactions, following the attack of activated sensitizers against the PDA molecules. In the present claimed invention,

neither sensitizers nor sensitizer systems are employed for the degradation process of 1,4-PDA which is in distinct contrast to the process of Leyrer et al. The degradation of 1,4-PDA in the present claimed invention proceeds via direct excitation of 1,4-PDA molecules by laser light without any sensitizer.

The superior feature of applicants' method is that the pure degradation products of 1,4-PDA can be obtained free from chemical impurities such as sensitizers or sensitizer systems.

As recited in new claim 25, and as recited in previous claims 14 and 15 (and original claims 3 and 4), 10 seconds - 180 seconds is selected as the time for irradiation of laser light of a wavelength within 250 to 1200 nm, and degradation of 1,4-PDA is undergone by setting up such an irradiation time, instead of using or adapting sensitizers.

Also, as recited in new claim 26, and as recited in previous claims 16 and 17 (and original claims 5 and 6), 30 minutes to 5 hours of heating time and 100 to 300°C temperature are the conditions selected for the thermo degradation of 1,4-PDA.

Thus, in the present claimed invention, degradation is undergone by setting the heating time, instead of using or adapting sensitizers.

In Leyrer et al, the duration of irradiation or heating of the mixture of PDA and the sensitizer depends on the type of

sensitizer and energy source, as well as other parameters, such as layer thickness, as noted in lines 47 to 50 at column 6.

Thus, there is no disclosure or suggestion in Leyrer et al of selecting the time for irradiation or heating.

Applicants therefore submit that Leyrer et al does not anticipate or render obvious the present invention.

For each of the foregoing reasons, it is submitted that the claims are in condition for allowance.

Accordingly, it is respectfully submitted that the rejection of claims 13-24 under 35 U.S.C. §103(a) has been overcome, and withdrawal of the rejection is therefore respectfully requested.

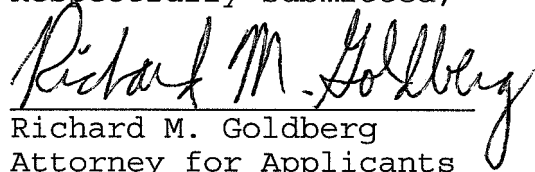
If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

In the event that this Paper is late filed, and the necessary petition for extension of time is not filed concurrently herewith, please consider this as a Petition for the requisite extension of time, and to the extent not tendered by check attached hereto, authorization to charge the extension fee, or any other fee required in connection with this Paper, to Account No. 07-1524.

The Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 07-1524.

In view of the foregoing amendments and remarks, it is respectfully submitted that Claims 25-45 are all allowable, and early and favorable consideration thereof is solicited.

Respectfully submitted,

A handwritten signature in cursive script, reading "Richard M. Goldberg". The signature is written in dark ink and is positioned above a horizontal line.

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